Life Cycle Assessment of Biogas Upgradation Using Microbial Electrosynthesis

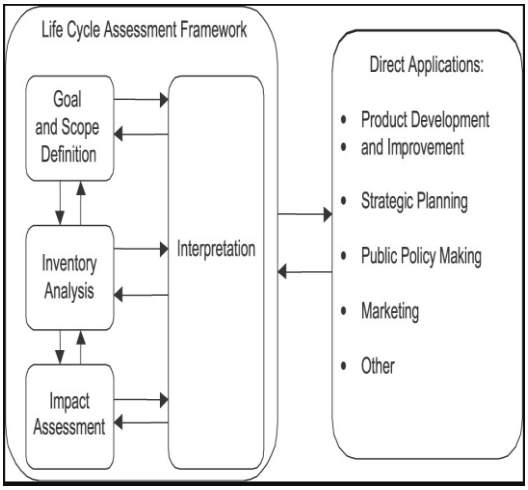
Master's thesis number: MT-44-22

Introduction and background:

The major purpose of this thesis is to explore a framework for LCA in biogas upgrading methods. First, the typical environmental consequences of the biogas upgrading system theory and LCA history are studied. It is critical to use LCA in the biogas upgrading system to understand the total environmental impact when new methodologies are introduced. As a result, the next phase of this research will focus on how the biogas upgrading system may adopt an LCA. The research also analyses and compares the most appropriate LCA approaches for the biogas upgrading systems.

Problem description and objective:

Microbial Electrosynthesis (MES) is a new green and sustainable bioenergy production technique with numerous advantages over bioenergy strategies, where primary use of microorganisms as catalysts to transform biomass energy into chemical energy in organic wastewater via applied voltage. MES is compared with one of the biogas upgrading system which is High Pressure Water Scrubbing (HPWS) to find out the environmental impact and better fit of upgrading system for the environment, where a framework of LCA is developed and environmental impact is calculated.



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